

Chicago
Occupational Health
& Safety Div.

IL.21

Job # 635, Bay X22
Bldg 14, 162D6

Argonne National Laboratory

OPERATED BY THE UNIVERSITY OF CHICAGO
BOX 299 LEMONT, ILL.
TELEPHONE LEMONT 800

INDUSTRIAL HYGIENE & SAFETY	
Info	
RECD	TELETYPE TWX LEMONT, ILL. 1710 SEP 29 1958
Reply	
Log	File

TELEGRAM WUX LB LEMONT, ILL.

September 26, 1958

IL.21-3

To: J. R. Novak Industrial Hygiene & Safety
From: H. J. Moe Industrial Hygiene & Safety
Subject: Report on Decontamination of Great Lakes Carbon Corporation Following Completion of Treat Fuel Fabrication

Clean-up operations of Great Lakes Carbon Corporation were started by Reclamation personnel on Monday, September 8 and completed on Friday, September 12.

An initial smear survey of the building prior to the start of the fabrication project had indicated alpha activity of 0-38 dpm/ft² and beta activity of 0-541 dpm/ft² on the floor of the building. Horizontal surfaces showed from 0-53 dpm/ft² alpha and 0-583 dpm/ft² beta. This contamination was due to previous work with normal uranium and thorium. A smear inside the oven which would be used to bake the fabricated fuel and a smear of the press to be used in the operation showed 30 dpm/ft² alpha, background beta and 23 dpm/ft² alpha and background beta, respectively.

Radiation Safety duplicated as nearly as possible the initial smear survey prior to clean-up operations. The smears taken on the floor of the building showed 47-712 dpm/ft² alpha and 0-720 dpm/ft² beta. Horizontal surfaces indicated from 6-518 dpm/ft² alpha and 0-400 dpm/ft² beta. A smear on the inside of the oven showed 1100 dpm/ft² alpha and 40 dpm/ft² beta. The press showed 606 dpm/ft² and 120 dpm/ft² beta. A smear survey of the ventilation system upon removal of the filters but before decontamination indicated 0-206 dpm/ft² alpha and 0-131 dpm/ft² beta.

The main clean-up consisted in the decontamination of the fuel fabrication area including the ventilation system. All mobile items were removed to B306 for de-

contamination and the remaining items were decontaminated on the spot. The entire floor area of Plant No. 3 was scrubbed as the final phase of the operation.

Radiation Safety checked all items after clean-up to insure that activity levels were below 100 dpm/ft² alpha and 550 dpm/ft² beta. The floor, fabrication structure, ventilation system and horizontal surfaces in the plant were checked both by smears and with instruments. Air counts were taken before, during and after cleaning.

The inside of the oven was dismantled and cleaned by Reclamation and smears taken after clean-up showed background for both alpha and beta on all sections. A smear of the oven shelves and oven doors indicated 20 dpm/ft² alpha and no contamination detected beta. Smears taken on the press revealed from 0-86 dpm/ft² alpha and 0-304 dpm/ft² beta. A survey of the ventilation system indicated from 0-67 dpm/ft² alpha and 0-131 dpm/ft² beta. Various other items surveyed were cleaned to less than 100 dpm/ft² alpha and less than 550 dpm/ft² beta. A thorough smear survey of the floor area revealed 0-33 dpm/ft² alpha and 0-348 dpm/ft² beta with the majority of the floor area outside the fabrication area being cleaned to background (see map and table of results). Horizontal surfaces showed from 6-59 dpm/ft² alpha and 0-400 dpm/ft² beta. A meter survey of the floor area, wooden structure of the fabrication area, ventilation system and horizontal surfaces revealed no hazardous spots as readings were no activity detected - 0.5M alpha and no activity detected - less than 0.1 mr/hr H&S beta and gamma.

Air counts taken before clean-up started decayed to less than 10% MPL within twenty-four hours. Only two of the air samples taken during clean-up operations indicated the presence of any long-lived airborne activity and both of these indicated concentrations of less than 20% of MPL after five days decay. Subsequent air samples revealed no long-lived airborne activity in concentration greater than a few percent of MPL including final samples taken after clean-up operations had been culminated.

J. R. Novak

-3-

September 26, 1958

The results of these surveys indicate that the activity which still exists in the building is very low level and presents no hazardous condition for continuance of work of any nature in the building.

H. J. Moe

HJM:nrw

Final Smear Results - Great Lakes Carbon Corporation Pilot Plant #3

<u>Number</u>	<u>Location</u>	<u>Type</u>	<u>dpm/ft²</u>
1	Floor of change room	α	27
		β	131
2	Floor of mixing room	α	20
		β	Background
3	Floor of pulverizer room	α	Background
		β	Background
4	Floor near weight station	α	Background
		β	304
5	Floor in front of oven	α	27
		β	174
6	Floor near final bake room	α	Background
		β	Background
7	Floor of final bake room	α	Background
		β	Background
8	Floor in corridor outside pulverizer room	α	Background
		β	Background
9	Floor inside entrance to fabrication facility	α	20
		β	304
10	Floor	α	33
		β	Background
11	Floor	α	7
		β	131
12	Floor near north entrance to fabrication facility	α	Background
		β	Background
13	Floor	α	Background
		β	217
14	Floor	α	Background
		β	Background
15	Floor	α	6
		β	217
16	Floor	α	Background
		β	174
17	Floor	α	Background
		β	Background

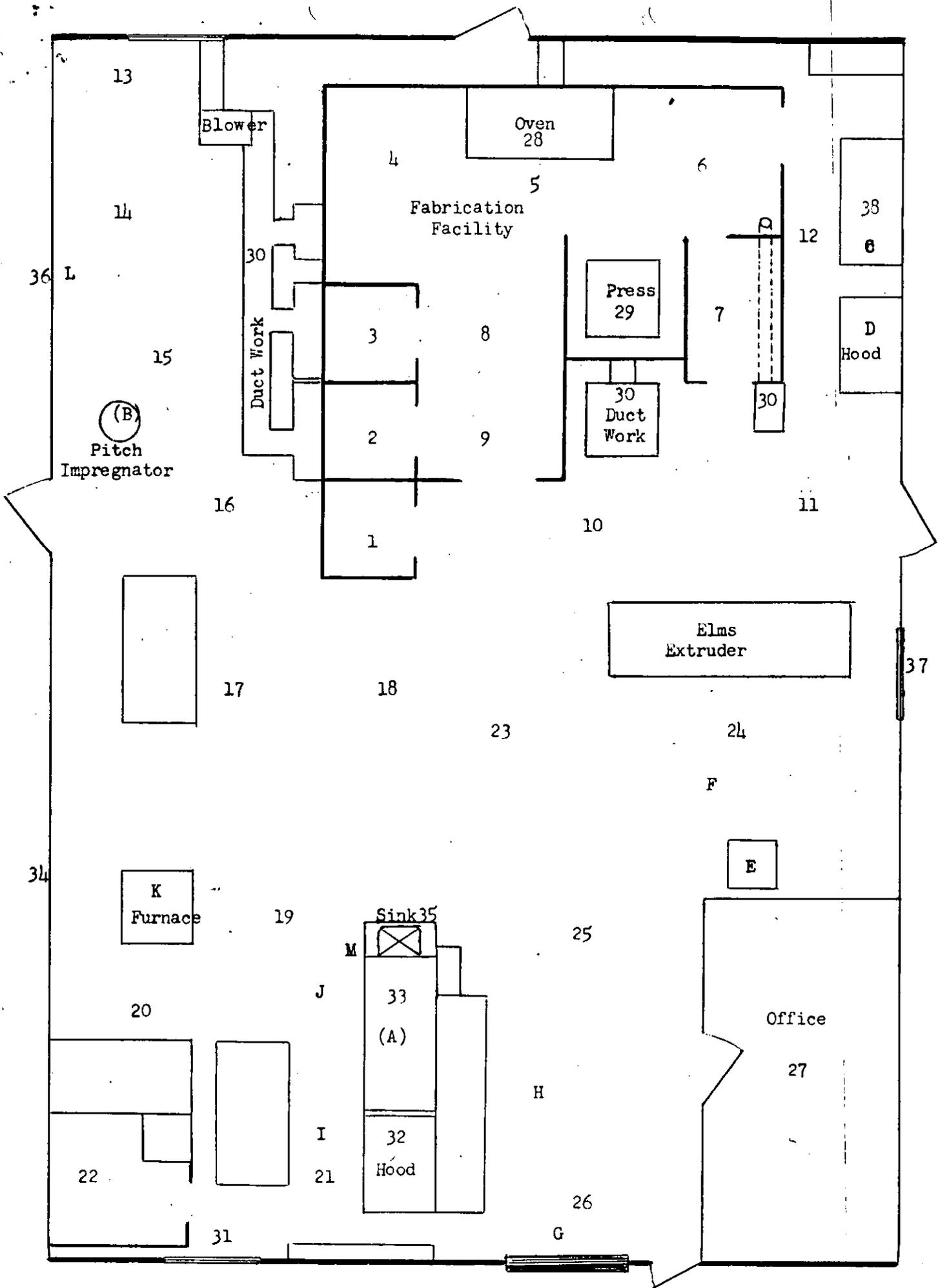
<u>Number*</u>	<u>Location</u>	<u>Type</u>	<u>dpm/ft²</u>
18	Floor	α	Background
		β	Background
19	Floor	α	Background
		β	348
20	Floor	α	6
		β	130
21	Floor	α	Background
		β	261
22	Floor	α	Background
		β	174
23	Floor	α	Background
		β	174
24	Floor	α	Background
		β	348
25	Floor	α	Background
		β	Background
26	Floor	α	Background
		β	Background
27	Floor of office	α	6
		β	87
28	Oven doors	α	20
		β	Background
29	Press Base	α	86
		β	304
30	Highest smear values for all duct work	α	67
		β	131
31	Window Sill	α	6
		β	200
32	Inside Hood	α	6
		β	80
33	Bench Top	α	47
		β	40
34	Ledge	α	47
		β	80
35	Sink Surface	α	47
		β	Background

<u>Number*</u>	<u>Location</u>	<u>Type</u>	<u>dpm/ft²</u>
36	Ledge	α	Background
		β	Background
37	North Window Sill	α	53
		β	400
38	Top of work bench	α	20
		β	Background

ALPHA SURVEY

<u>Letter*</u>	<u>Location</u>	<u>Reading/100 cm²</u>
A	Bench Top	0.2M
B	Pitch Impregnator	0.5M
C	Bench Top	No Activity Detected
D	Inside Hood	"
E	Water Cooler	"
F	Floor	"
G	Floor	"
H	Floor	"
I	Floor	"
J	Floor	"
K	Furnace	"
L	Ledge	"
M	Sink Surface	"

* See Survey Map



Chicago

ARGONNE NATIONAL LABORATORY

September 25, 1958

INDUSTRIAL HYGIENE & SAFETY	
Info	_____
RECD	SEP 26 1958 <i>mf.</i>
Reply	_____
Log	_____ File _____

Mr. H. E. Keel
Manager of Development
Great Lakes Carbon Corporation
333 North Michigan Avenue
Chicago 1, Illinois

Re: Subcontract No. 31-109-38-873

Dear Mr. Keel:

Under subsection 1.m. of Article II of Subcontract No. 31-109-38-873 between Great Lakes Carbon Corporation and Argonne National Laboratory, the Laboratory assumed the obligation to decontaminate items of equipment and areas of Great Lakes' plant which became contaminated owing to the subcontract work and agreed to reduce the radiation levels of such plant areas and equipment to a point where they would not exceed safe radiation levels in accordance with standards in effect at the Laboratory. This decontamination work has now been completed. There are quoted below excerpts from a report prepared by the Laboratory's Industrial Hygiene and Safety Division concerning the condition of Great Lakes' plant and equipment after decontamination had been accomplished.

"The main clean-up operation consisted in the decontamination of the fuel fabrication area including the ventilation system. All mobile items were removed to D306 for decontamination and remaining items were decontaminated on the spot. The entire floor area was scrubbed as the final phase of the operation.

"Radiation Safety checked all items after clean-up to insure that activity levels were below 100 dpm/ft² alpha and 550 dpm/ft² beta. The floor, fabrication structure, and horizontal surfaces in the building were checked both by smears and with instruments. Air counts were taken before, during and after cleaning.

"A thorough smear check of the oven used for baking the fuel revealed no contamination detected after clean-up. A smear taken on the oven doors showed 20 dpm/ft² alpha and no contamination detected beta. Smears taken on the press revealed from 0-86 dpm/ft² alpha and 0-304 dpm/ft² beta. A survey of the ventilation system indicated from 0-67 dmp/ft² alpha and 0-131 dpm/ft² beta. Various other items

September 25, 1958

surveyed were cleaned to less than 100 dpm/ft² alpha and less than 350 dpm/ft² beta. A thorough survey of the floor area revealed from 0-33 dpm/ft² alpha and 0-348 dpm/ft² beta with the majority of the floor area outside the fabrication area being cleaned to background. A water survey of the floor area, wooden structure of the fabrication area and horizontal surfaces revealed no hazardous spots. All air counts taken revealed no long-lived airborne activity in excess of MPL.

"The results of the surveys indicate that the activity which still exists in the building is very low level and presents no hazardous condition for continuance of work of any nature in the building."

For your information, the levels of alpha and beta contamination found subsequent to decontamination by the Laboratory's Reclamation unit were lower than those detected during the initial survey made prior to the start of fabrication work under the subcontract.

It would be appreciated if you would acknowledge that the Laboratory has discharged its obligations under subsection 1.m. of Article II by signing and returning one copy of this letter to the Laboratory.

You will also be interested to know that all urine samples submitted as of September 17, 1958 by Great Lakes' employees engaged in the subcontract work show that none of the individuals had radioactive material in their bodies in excess of 10% of maximum permissible concentration. Films worn by Great Lakes' personnel have been processed and no exposure in excess of 25% of the established maximum weekly level of 300 mr has been indicated.

Very truly yours,

J. H. McKinley
Business Manager

JHM:pjt:

Great Lakes Carbon Corporation acknowledges that Argonne National Laboratory has fully discharged its responsibilities with respect to the decontamination of equipment and plant areas as required under subsection 1.m. of Article II of Subcontract No. 31-109-38-873.

Signed _____

bc: B. Evans
L. K. Hurst
W. F. McConnell
H. J. Moe
J. R. Novak ✓
J. F. Schumar
P. R. Shleson
RF